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EXAMINER

CHRISTENSEN, SCOTT B

ART UNIT	PAPER NUMBER
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2144

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/626,988

Applicant(s)

ARNDT ET AL.

Examiner

Scott Christensen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in regards to the amendment filed on 12/12/2006.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 18 of copending Application No. 10/702,994. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both drawn towards a method or apparatus (system) for emulating multiple logical ports on a physical port. In the case of claim 1, Application No. 10/702,994 discloses that the method is in a logically partitioned data processing system, and rather than providing a subnet

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management queue pair, it provides a single general services management queue pair and an aliased corresponding queue pair for each of the logical ports. The fact that the method is in a logically partitioned data processing system including logical partitions is interpreted as being intended use. Meanwhile, the difference between a single general services management queue pair and a subnet management queue pair does not render the two patentably distinct from each other. In the case of claim 10, the differences between the instant application and Application No. 10/702,944 are similar to that of claims 1 in both copending applications, except that the instant application refers to an apparatus as opposed to the system of Application No. 10/702,944. The differing terms do not render the claims patentably distinct, as the two terms, in the context used in the claims, can be interchanged in either claim and have no impact on the scope of the claim.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-2 and 5-18 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-9 are directed towards a method for emulating multiple logical ports on a single physical port.

Claims 10-18 are directed towards an apparatus for emulating multiple logical ports on a single physical port.

For a method claim to be found statutory, it must have a useful, concrete, and tangible result. In the case of claims 1-2 and 5-9, the steps are all providing, which only declares the existence of the element being provided for. The providing of the elements does provide a useful and concrete result, but not a tangible one. The elements are merely shown to exist, but take no tangible action. For the claim to be found statutory, some information must be explicitly stored, transmitted, or displayed in one of the steps. In this case, including a step that receives a packet at a physical port and forwards the packet to an application or processor associated with the designated logical port should make the claim statutory.

For an apparatus claim to be found statutory, the apparatus must be limited to hardware or a combination of hardware and software. In the case of claims 10-18, the apparatus comprises a subnet management queue pair, a plurality of logical ports, and an aliased subnet management queue pair. None of these components can reasonably be interpreted as being hardware or a combination of hardware and software rather than just software alone. It is noted that a physical port is not software alone, and actually refers to the hardware connection. Physical port in this case, though, is not claimed as an element of the claim, but is claimed as a component that one of the elements has an interaction with, and is thus not an element of the apparatus. For claims 10-18 to be found statutory, claim 10 should be amended to include the physical port as an element of the claim. A recommended amendment

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would read "...the apparatus comprising: a physical port; a subnet management queue pair for [[a]] the physical port; a plurality of logical ports..."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 7, 8, and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bannai et al. in US Patent Application Number US 2003/0206548 A1, hereafter referred to as "Bannai," in view of Buonadonna and Culler in "Queue Pair IP: A Hybrid Architecture for System Area Networks," presented on May 29, 2002 in the IEEE 29th Annual International Symposium on Computer Architecture, hereafter referred to as "Buonadonna."

A. With regard to claim 1, Bannai discloses a method and apparatus for emulating multiple logical ports on a physical port (Bannai: Claim 1 provides for a method of providing multiple services over a single physical port, where the method comprises a lookup table associating a set of logical port identifiers with a set of logical ports.

Therefore, multiple logical ports are associated with (or emulated on) a single physical port) comprising providing a management interface for a physical port (Bannai: Paragraph [0035]. The management interface is associated with physical ports, and can manage the communications of the physical ports as well as the logical ports),

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providing a plurality of logical ports (Bannai: Claim 1. As a set of logical ports is referred to in the lookup table, they are inherently provided), wherein packets intended for the plurality of logical ports are received at the physical port (Bannai: paragraph [0006]: As there is a physical port, and packets can only be initially received at a physical port, all packets that are intended for the logical ports are inherently received at the physical port), and providing an aliased subnet management interface for each of the plurality of logical ports (Bannai: paragraph [0029] and Figure 1 (314). The system port manager handles the creation and management of a logical port).

Bannai does not disclose expressly that the interface is a queue pair.

Buonadonna teaches utilizing Queue Pair IP for use in a system area network architecture (Buonadonna: Abstract). When Queue Pair IP is utilized in Bannai, the management interface and the aliased subnet management interface, referred to above, would both be management queue pairs, as the interface of Buonadonna is queue pair.

It would have been obvious to a person of ordinary skill in the art to utilize Queue Pair IP, as taught by Buonadonna, with the logical port emulation of Bannai.

The suggestion/motivation for doing so would have been that "Queue Pair IP...combines the interface from industry proposals for low overhead, high bandwidth networks...with the well established inter-network protocol suite." (Buonadonna: Abstract) Further, "with modest hardware support, QPIP can perform as well as traditional inter-network protocol implementations at a fraction of the host CPU overhead." (Buonadonna: Abstract)

With regard to claim 10, the claimed subject matter is substantially similar to claim 1, except that packets intended for

With regard to claim 3, Bannai as modified by Buonadonna teaches sending a packet from an aliased subnet management queue pair (Bannai: paragraph [0028]. As there are outgoing packets on the logical ports, the interface associated with the logical port, the aliased subnet management queue pair, is able to send packets), wherein said aliased queue pair comprises a queue pair zero (Bannai: Paragraph [0028]. "queue pair zero" is a term that refers to a management queue pair. The term is typically associated with the infiniband architecture, but the claim does not require that it is an infiniband queue pair zero, as in claim 9. Bannai, as discussed above, teaches an aliased subnet management queue pair.); and responsive to the packet being intended for a given logical port, looping the packet back to the subnet management queue pair for the physical port (Bannai: paragraph [0028]. Outgoing packets from the logical port must be forwarded to the physical port in order to reach the network. Therefore, the packet must be forwarded to the interface, or the subnet management queue pair that is associated with the physical port).

With regard to claim 4, Bannai as modified by Buonadonna teaches that the method further comprises responsive to the packet being intended for an external port, routing the packet to the physical port (Bannai: paragraph [0028]. An outgoing packet is intended for a port that is external to the system. The packet must be routed from the logical port to the physical port in order to reach any port external to the system).

With regard to claims 5 and 14, Bannai as modified by Buonadonna teaches providing a logical switch for the physical port (Bannai: paragraph [0006]. The packet forwarding device is interpreted as performing the function of the logical switch of claims 5 and 14).

With regard to claims 7 and 11, Bannai as modified by Buonadonna teaches that a hypervisor subnet management agent routes traffic for the plurality of logical ports (Bannai: paragraph [0006]. A hypervisor subnet management agent is being interpreted as being similar to the packet forwarding device, as the hypervisor subnet management agent seems to simply be code that allocates packets to one of the logical ports, which in turn would result in the allocation of a packet to one of the different virtual computers that a hypervisor would manage resources for.)

With regard to claims 2 and 12, Bannai as modified by Buonadonna teaches that packets are received at the physical port (Bannai: paragraph [0006]), and that if the packet is intended for a given logical port, looping the packet back to the given logical port (Bannai: paragraph [0006]. Though Bannai uses the term "forwarding," the term "looping" is not distinct from forwarding.).

With regard to claims 8 and 13, Bannai as modified by Buonadonna teaches that the hypervisor subnet management agent transmits response packets on behalf of the plurality of logical ports (This is inherently in the teachings of the references. Any packet that has a response will be routed to the physical port through the forwarding device, which is the hypervisor subnet manager as in the claims. In the end, any response packets will be transmitted by the forwarding device on behalf of the plurality

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of logical ports, as the claim language does not require that the hypervisor subnet management agent actually generates the response.).

With regard to claim 15, Bannai as modified by Buonadonna teaches that an aliased manager queue pair sends a packet (Bannai: paragraph [0006]), and the logical switch, responsive to the packet being intended for a given logical port, loops the packet back to the subnet management queue pair for the physical port (Bannai: paragraph [0006]. Though Bannai uses the term "forwarding," the term "loops" is not distinct from "forwards").

With regard to claim 16, Bannai as modified by Buonadonna teaches that the logical switch, responsive to the packet being intended for an external port, routes the packet to the physical port (Bannai: paragraph [0028]. An outgoing packet is intended for a port that is external to the system. The packet must be routed from the logical port to the physical port in order to reach any port external to the system. The forwarding device of paragraph [0006], which is similar to the logical switch, routes the packets).

Thus it would have been obvious to combine Bannai with Buonadonna to obtain the invention as specified in claims 1-5, 7, 8, and 10-16.

Claim Rejections - 35 USC § 103

8. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bannai and Buonadonna as applied to claims 1 and 10 above, and further in view of Fernandes et al. in US Patent Application Publication number US 2003/0236852 A1, hereafter referred to as "Fernandes."

Bannai as modified by Buonadonna teaches all of the limitations of claims 6 and 17 (see above for claims 1 and 10 rejected under Bannai as modified by Buonadonna) except that each aliased subnet manager queue pair is associated with a logical partition.

Fernandes teaches sharing a network adapter among multiple logical partitions in a data processing system. Each logical partition has an I/O adapter associated with it (Fernandes: Figure 1). The I/O adapter is interpreted as being the complete logical I/O adapter, meaning that it would have the interface associated with it, the interface being the manager queue pair.

It would have been obvious to a person of ordinary skill in the art to combine the individual logical I/O adapters of Fernandes with the logical port emulation of Bannai as modified by Buonadonna.

The suggestion/motivation for doing so would have been to enable a multi-partitioned machine wherein each of the partitions has access to a common network adapter or a common set of network adapters such that the number of physical adapters is less than the number of logical partitions to function (Fernandes: paragraph [0006]).

Thus, it would have been obvious to combine Fernandes with Bannai and Buonadonna to obtain the invention as specified in claims 6 and 17.

Claim Rejections - 35 USC § 103

9. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bannai and Buonadonna as applied to claims 1 and 10 above, and further in view of whatis.com's article, "Infiniband," released June 5, 2001 on <http://www.whatis.com>, hereafter referred to as "Infiniband."

Bannai as modified by Buonadonna teaches all of the limitations of claims 6 and 17 (see above for claims 1 and 10 rejected under Bannai as modified by Buonadonna) except that each subnet management queue pair is an Infiniband queue pair zero.

Infiniband teaches using an Infiniband system for the I/O within a computer system (Infiniband: Paragraph 1).

It would have been obvious to a person of ordinary skill in the art to use Infiniband in the logical port emulator of Bannai as modified by Buonadonna.

The suggestion/motivation to do so would have been that Infiniband resembles a regular computer network, but is instead for I/O devices. Infiniband allows for greater bandwidth and almost unlimited expandability in computer systems (Infiniband: paragraph 1). By using the logical port emulation of Bannai as modified by Buonadonna, devices on an Infiniband network could be divided into virtual devices, each with a logical port associated with it, where each device shares a single physical connection to the Infiniband network. The Infiniband queue pair zero is simply the manager for the physical port in an Infiniband network, so by implementing Infiniband in the logical port emulator, the subnet management queue pair would become an Infiniband queue pair zero.

Thus, it would have been obvious to combine Infiniband with Bannai as modified by Buonadonna to obtain the invention as specified in claims 9 and 18.

Claim Rejections - 35 USC § 103

10. Claims 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Bannai in view of Buonadonna and Infiniband.

With respect to claim 19, Bannai discloses a host channel adapter comprising one or more physical ports (Bannai: Abstract), a management interface for each physical port, wherein packets received at a physical port are placed in a corresponding management interface ((Bannai: Paragraph [0035]. The management interface is associated with physical ports, and can manage the communications of the physical ports as well as the logical ports. The packets are placed in the interface when they arrive through the physical port.), a plurality of logical host channel adapters (Bannai: paragraph [0029]), wherein each logical host channel adapter has at least one logical port (Bannai: paragraph [0029]), and a subnet management agent, wherein the subnet management agent receives packets at a management interface for a physical port, transmits response packets on behalf of the logical ports, and routes the packets to the intended logical ports (Bannai: paragraph [0006]. A hypervisor subnet management agent is being interpreted as being similar to the packet forwarding device, as the hypervisor subnet management agent seems to simply be code that allocates packets to one of the logical ports, which in turn would result in the allocation of a packet to one of the different virtual computers that a hypervisor would manage resources for.

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Responding to packets on behalf of the logical ports is inherently in Bannai. Any packet that has a response will be routed to the physical port through the forwarding device, which is the hypervisor subnet manager as in the claims. In the end, any response packets will be transmitted by the forwarding device on behalf of the plurality of logical ports, as the claim language does not require that the hypervisor subnet management agent actually generates the response.).

Bannai doesn't disclose that the management interface is a queue pair, or a queue pair zero, or that each logical port has an associated physical port and each logical port can receive a packet only from its associated physical port.

A person of ordinary skill in the art would have considered a situation where a data processing system has only one physical port. In this situation, a logical port can receive a packet only from its associated physical port, as only one physical port exists.

It would have been obvious to a person of ordinary skill in the art to only have one physical port in the adapter of Bannai, and thus have it so that a logical port can receive a packet only from its associated physical port, as only one physical port exists.

The suggestion/motivation for doing so would have been that not all data processing systems have multiple physical ports. In order to have the system of Bannai be adaptable to more systems, situations with only one physical port would need to be considered. When only one physical port is implemented, then the logical ports could only receive packets from its associated physical port, as there is only one.

Buonadonna teaches utilizing Queue Pair IP for use in a system area network architecture (Buonadonna: Abstract). When Queue Pair IP is utilized in Bannai, the

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management interface and the aliased subnet management interface, referred to above, would both be management queue pairs, as the interface of Buonadonna is queue pair.

It would have been obvious to a person of ordinary skill in the art to utilize Queue Pair IP, as taught by Buonadonna, with the logical port emulation of Bannai.

The suggestion/motivation for doing so would have been that "Queue Pair IP...combines the interface from industry proposals for low overhead, high bandwidth networks...with the well established inter-network protocol suite." (Buonadonna: Abstract) Further, "with modest hardware support, QPIP can perform as well as traditional inter-network protocol implementations at a fraction of the host CPU overhead." (Buonadonna: Abstract)

Infiniband teaches using an Infiniband system for the I/O within a computer system (Infiniband: Paragraph 1).

It would have been obvious to a person of ordinary skill in the art to use Infiniband in the logical port emulator of Bannai as modified by Buonadonna.

The suggestion/motivation to do so would have been that Infiniband resembles a regular computer network, but is instead for I/O devices. Infiniband allows for greater bandwidth and almost unlimited expandability in computer systems (Infiniband: paragraph 1). By using the logical port emulation of Bannai as modified by Buonadonna, devices on an Infiniband network could be divided into virtual devices, each with a logical port associated with it, where each device shares a single physical connection to the Infiniband network. The Infiniband queue pair zero is simply the manager for the physical port in an Infiniband network, so by implementing Infiniband in

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the logical port emulator, the subnet management queue pair would become an Infiniband queue pair zero.

With respect to claim 20, Bannai as modified by Buonadonna and Infiniband teaches that the host channel adapter further comprises a logical switch associated with a given physical port (Bannai: paragraph [0006]. The packet forwarding device is interpreted as performing the function of the logical switch of claim 20), wherein the logical switch receives a packet from an aliased queue pair zero, and responsive to the packet being intended for a given logical port, loops the packet back to a queue pair zero for a physical port (Bannai: paragraph [0006]. Though Bannai uses the term "forwarding," the term "looping" is not distinct from forwarding.).

Thus it would have been obvious to combine Bannai with Buonadonna and Infiniband to obtain the invention as specified in claims 19-20.

Response to Arguments

11. Applicant's arguments filed 12/12/2006 have been fully considered but they are not persuasive for the reasons listed below.

Specification

12. The amendments to the specification that were submitted on 12/12/2006 have overcome the objections raised in the Office Action mailed 11/21/2006.

Double Patenting

13. On pages 7-8 of the Remarks/Arguments section of applicant's response argues the provisional obvious-type double patenting. Applicant cites MPEP 706.02(f)(2)I, stating that this section of the MPEP states that the later filed application should be rejected, but not the earlier file application. It is noted, however, that the cited passage from the MPEP used to support the conclusion refers to provisional 102(e) rejections. In this case, 102(e) was not applied.

The proper section to cite for provisional obvious-type double patenting would have been in chapter 804, which provides guidance on the different types of double patenting rejections. MPEP 804.II.1 discusses obvious type double patenting.

Claim Rejections - 35 USC § 101

14. With regards to the 101 rejection, and the arguments provided on pages 8-9, the 101 rejection for claims 3-4 have been rescinded, and the other claims are reworded above, including specific amendment suggestions that would overcome the rejection.

Claim Rejections - 35 USC § 103

15. For the rejection of claim 1 under 35 USC 103, applicant seems to have provided eight distinct arguments.

First, applicant argues on page 14, lines 3-9 that Bannai and Buonadonna do not teach or suggest the overall combination of claim 1, and makes reference to two

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specific elements, (1) and (2). The rejection has been reworded above to better demonstrate the combination of references. Bannai disclosed the features except for the subnet management queue pair and an aliased subnet management queue pair. Bannai does disclose management interfaces, as explained above. Buonadonna teaches Queue Pair IP, which when combined with Bannai, results in the interface becoming queue pairs in the combination of Buonadonna and Bannai.

Second, applicant argues on page 15, lines 1-5 that Bannai makes no reference to queue pairs, to logical partitions, distributed computer systems, or channel adapters. First, it is noted that the lack of queue pairs in Bannai's disclosure is the reason that 35 USC 103 was relied upon instead of 35 USC 102. Buonadonna is being relied upon for the queue pair architecture. Second, the logical partitions, distributed computer systems, and channel adapters are not recited in the instant claim, but only appears in the instant specification. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Third, applicant argues on page 15, lines 6-20 that Bannai discloses an arrangement that has little or no resemblance to the features and elements of claim 1. Applicant argues that claim 1 requires a first and second communication channel, associated with two different managing entities. Bannai, as recited in the rejection under 35 USC 103, discloses managing entities and logical ports associated with a physical port. The claim does not explicitly require a first and second communication channel, as applicant argues on lines 19-20. As interpreted, the claim only requires

interactions with the physical port, and requires a plurality of logical ports. The only communication channel that seems to actually exist in the claim language is the communication channel associated with the physical port, which any network connection has. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Fourth, applicant argues on page 15, lines 21-29 that Buonadonna is concerned with departing from the infiniband architecture. First, it is noted that Buonadonna makes no mention of departing from infiniband. Buonadonna is concerned with improving on IP utilizing lessons learned from infiniband. The Infiniband reference explains in the third paragraph that infiniband uses IPv6. Infiniband can be related to having an IPv6 network within a single computing system, rather than with multiple computer nodes. As applicant correctly asserts, Buonadonna seeks to implement basic queue pair operations over a subset of TCP, UDP, and IPv6. As these teachings are applicable to IPv6, they are also applicable to infiniband, which uses IPv6. It is also noted that claim 1 does not require infiniband, as applicant incorrectly asserts. Infiniband is not actually required until claim 9 (with claim 18 being the only other claim in the entire application requiring infiniband), which depends from claim 1. The claim language indicates that claim 1 is intended to cover architectures other than infiniband, as the infiniband queue pair zero is the infiniband management queue pair, which claim 1 includes in generic terms.

Fifth, applicant notes on page 16, lines 1-3 that the Office Action did not explain how particular elements of Buonadonna could be combined with Bannai to realize either cited feature of claim 1. The rejection under 35 USC 103 has been clarified to demonstrate this.

Sixth, applicant argues that since neither Bannai nor Buonadonna shows or suggests feature (1) or feature (2), no combination of the references can show or suggest the features. This assertion is incorrect. Rejections under 35 USC 103 merely requires that the combination of references teach the elements of the claim. Neither reference is required to show any single feature in its entirety as long as the combination teaches each feature. Once again, the rejection has been restated to make the combination, and how each feature is presented in the teachings of the combination of references, clearer.

Seventh, applicant argues on page 16, lines 10-35 that examiner has engaged in impermissible hindsight. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See, for example, *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Eighth, applicant argues on page 16, line 36 to page 16, line 5 that Buonadonna is concerned with moving away from infiniband. As stated earlier, Buonadonna is concerned with utilizing advantages from infiniband with storage area networks (Buonadonna: Abstract). There is no reference in Buonadonna to replacing the infiniband architecture with the QPIP. Rather, the first five lines of the abstract clearly shows that the purpose is to "propose a SAN architecture...that combines the interface from industry proposals for low overhead, high bandwidth networks, e.g. Infiniband, with the well established inter-network protocol suite." Infiniband is not an architecture for storage area networks, but is an architecture for data flow between processors and I/O devices in a single computer system, with the intention of replacing the PCI interface (Infiniband: Page 1, lines 1-6). It is noted that the teachings of networks systems, especially those utilizing IPv6 can be applied to infiniband.

16. Applicant's arguments with respect to claims 10 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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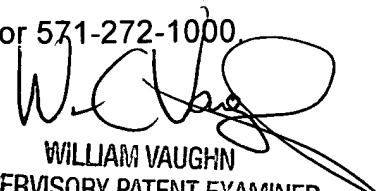
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Christensen whose telephone number is (571) 270-1144. The examiner can normally be reached on Monday through Thursday 6:30AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vaughn William can be reached on (571) 272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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